

SEQUENCE LISTING

<110> University of Texas Health Science Center at San Antonio
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 Kannan, Thirumalai

<120> METHODS AND COMPOSITIONS FOR MYCOPLASMA PNEUMONIAE EXOTOXINS

<130> 9237.10WO

<150> US 60/508,607

<151> 2003-10-03

<160> 76

<170> PatentIn version 3.2

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Ser Thr Ser Glu Thr Pro Thr Ala Ala Ile Arg Phe Phe Gly Ser Trp
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Leu Arg Glu Tyr Val Pro Glu His Pro Arg Arg Ala Tyr Leu Tyr Glu
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Ile Arg Ala Asp Gln His Phe Tyr Asn Ala Arg Ala Thr Gly Glu Asn
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Leu Leu Asp Leu Met Arg Gln Arg Gln Val Val Phe Asp Ser Gly Asp
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Arg Glu Met Ala Gln Met Gly Ile Arg Ala Leu Arg Thr Ser Phe Ala
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Tyr Gln Arg Glu Trp Phe Thr Asp Gly Pro Ile Ala Ala Ala Asn Val
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Arg Ser Ala Trp Leu Val Asp Ala Val Pro Val Glu Pro Gly His Ala

2

His Asp Leu Tyr Val Cys Pro Leu Lys Asn Pro Pro Ser Asp Leu Glu
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Glu Leu Gln Ile Ile Val Asp Glu Cys Thr Thr His Ala Gln Phe Val
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Thr Met Arg Ala Ala Ser Thr Phe Phe Val Asp Val Gln Leu Gly Trp
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Gln Met Lys Thr Pro Asp Gly Gln Ile Phe Tyr Asp Leu Lys Thr Ser
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Lys Ile Phe Phe Val Gln Asp Asn Gln Asn Val Phe Phe Leu His Asn
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Lys His Asp Met Asn Glu Asp Lys Asp Glu Asn Phe Lys Trp Tyr Phe
 515 520 525

Ser Arg Asp Asp Leu Thr Ile Pro Ser Val Glu Gly Leu Asn Phe Arg
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His Ile Arg Cys Tyr Ala Asp Asn Gln Gln Leu Lys Val Ile Ile Ser
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Ser Thr Ser Glu Thr Pro Thr Ala Ala Ile Arg Phe Phe Gly Ser Trp
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Ile Arg Ala Asp Gln His Phe Tyr Asn Ala Arg Ala Thr Gly Glu Asn
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Arg Ser Ala Trp Leu Val Asp Ala Val Pro Val Glu Pro Gly His Ala
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Glu Met His Asn Pro His Tyr Gln Glu Leu Gln Thr Gln Ala Asn Asp
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Gln Pro Trp Leu Pro Thr Pro Gly Ile Ala Thr Pro Val His Leu Ser
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Leu Arg Glu Tyr Val Pro Glu His Pro Arg Arg Ala Tyr Leu Tyr Glu
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Ile Arg Ala Asp Gln His Phe Tyr Asn Ala Arg Ala Thr Gly Glu Asn
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Leu Leu Asp Leu Met Arg Gln Arg Gln Val Val Phe Asp Ser Gly Asp
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His His Pro Ala Gly Arg Val Val Glu Thr Thr Arg Ile Asn Glu Pro
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Glu Met His Asn Pro His Tyr Gln Glu Leu Gln Thr Gln Ala Asn Asp
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Gln Pro Trp Leu Pro Thr Pro Gly Ile Ala Thr Pro Val His Leu Ser
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Ile Pro Gln Ala Ala Ser Val Ala Asp Val Ser Glu Gly Thr Ser Ala
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 Ile Pro Gln Ala Ala Ser Val Ala Asp Val Ser Glu Gly Thr Ser Ala
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Glu Asn Pro Leu Asp Lys Cys Ile Ala Glu Lys Ile Asp Asn Tyr Asn
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Leu Gln Ser Leu Pro Gln Tyr Ala Ser Ser Val Lys Glu Leu Glu Asp
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Thr Pro Val Tyr Leu Arg Gly Ile Lys Thr Gln Lys Thr Phe Met Leu
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Gln Thr Glu Asn Gly Leu Phe Arg Asn Thr Lys Ser Gly Gly Ser Gln
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His Asp Leu Tyr Val Cys Pro Leu Lys Asn Pro Pro Ser Asp Leu Glu
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Glu Leu Gln Ile Ile Val Asp Glu Cys Thr Thr His Ala Gln Phe Val
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Thr Met Arg Ala Ala Ser Thr Phe Phe Val Asp Val Gln Leu Gly Trp
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Tyr Trp Arg Gly Tyr Tyr Tyr Thr Pro Gln Leu Ser Gly Trp Ser Tyr
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Gln Met Lys Thr Pro Asp Gly Gln Ile Phe Tyr Asp Leu Lys Thr Ser
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His His Pro Ala Gly Arg Val Val Glu Thr Thr Arg Ile Asn Glu Pro
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Glu Met His Asn Pro His Tyr Gln Glu Leu Gln Thr Gln Ala Asn Asp
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Gln Pro Trp Leu Pro Thr Pro Gly Ile Ala Thr Pro Val His Leu Ser
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Ile Pro Gln Ala Ala Ser Val Ala Asp Val Ser Glu Gly Thr Ser Ala
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Ser Leu Ser Phe Ala Cys Pro Asp Trp Ser Pro Pro Ser Ser Asn Gly
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Glu Asn Pro Leu Gly Lys Cys Ile Ala Glu Lys Ile Asp Asn Tyr Asn
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Leu Gln Ser Leu Pro Gln Tyr Ala Ser Ser Val Lys Glu Leu Glu Asp
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Thr Pro Val Tyr Leu Arg Gly Ile Lys Thr Gln Lys Thr Phe Met Leu
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Gln Ala Asp Pro Gln Asn Asn Asn Val Phe Leu Val Glu Val Asn Pro
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Lys Gln Lys Ser Ser Phe Pro Gln Thr Ile Phe Phe Trp Asp Val Tyr
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Gln Arg Ile Cys Leu Lys Asp Leu Thr Gly Ala Gln Ile Ser Leu Ser
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Leu Thr Ala Phe Thr Thr Gln Tyr Ala Gly Gln Leu Lys Val His Leu
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Ser Val Ser Ala Val Asn Ala Val Asn Gln Lys Trp Lys Met Thr Pro
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Gln Asp Ser Ala Ile Thr Gln Phe Arg Val Ser Ser Glu Leu Leu Gly
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Gln Thr Glu Asn Gly Leu Phe Trp Asn Thr Lys Ser Gly Gly Ser Gln
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His Asp Leu Tyr Val Cys Pro Leu Lys Asn Pro Pro Ser Asp Leu Glu
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Glu Leu Gln Ile Ile Val Asp Glu Cys Thr Thr His Ala Gln Phe Val
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Thr Met Arg Ala Ala Ser Thr Phe Phe Val Asp Val Gln Leu Gly Trp
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Tyr Trp Arg Gly Tyr Tyr Tyr Thr Pro Gln Leu Ser Gly Trp Ser Tyr
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Gln Met Lys Thr Pro Asp Gly Gln Ile Phe Tyr Asp Leu Lys Thr Ser
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Lys Ile Phe Phe Val Gln Asp Asn Gln Asn Val Phe Phe Leu His Asn
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Lys Leu Asn Lys Gln Thr Gly Tyr Ser Trp Asp Trp Val Glu Trp Leu
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Lys His Asp Met Asn Glu Asp Lys Asp Glu Asn Phe Lys Trp Tyr Phe
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Ser Arg Asp Asp Leu Thr Ile Pro Ser Val Glu Gly Leu Asn Phe Arg
 530 535 540

His Ile Arg Cys Tyr Ala Asp Asn Gln Gln Leu Lys Val Ile Ile Ser
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 50 55 60

Leu Arg Glu Tyr Val Pro Glu His Pro Arg Arg Ala Tyr Leu Tyr Glu
 65 70 75 80

Ile Arg Ala Asp Gln His Phe Tyr Asn Ala Arg Ala Thr Gly Glu Asn
 85 90 95

Leu Leu Asp Leu Met Arg Gln Arg Gln Val Val Phe Asp Ser Gly Asp
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Arg Glu Met Ala Gln Met Gly Ile Arg Ala Leu Arg Thr Ser Phe Ala
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Tyr Gln Arg Glu Trp Phe Thr Asp Gly Pro Ile Ala Ala Ala Asn Val
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Arg Ser Ala Trp Leu Val Asp Ala Val Pro Val Glu Pro Gly His Ala
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His His Pro Ala Gly Arg Val Val Glu Thr Thr Arg Ile Asn Glu Pro
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Glu Met His Asn Pro His Tyr Gln Glu Leu Gln Thr Gln Ala Asn Asp
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Gln Pro Trp Leu Pro Thr Pro Gly Ile Ala Thr Pro Val His Leu Ser
 195 200 205

Ile Pro Gln Ala Ala Ser Val Ala Asp Val Ser Glu Gly Thr Ser Ala
 210 215 220

Ser Leu Ser Phe Ala Cys Pro Asp Trp Ser Pro Pro Ser Ser Asn Gly
 225 230 235 240

Glu Asn Pro Leu Gly Lys Cys Ile Ala Glu Lys Ile Asp Asn Tyr Asn
 245 250 255

Leu Gln Ser Leu Pro Gln Tyr Ala Ser Ser Val Lys Glu Leu Glu Asp
 260 265 270

Thr Pro Val Tyr Leu Arg Gly Ile Lys Thr Gln Lys Thr Phe Met Leu
 275 280 285

Gln Ala Asp Pro Gln Asn Asn Asn Val Phe Leu Val Glu Val Asn Pro
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Lys Gln Lys Pro Ser Phe Pro Gln Thr Ile Phe Phe Trp Asp Val Tyr
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Gln Arg Ile Cys Leu Lys Asp Leu Thr Gly Ala Gln Ile Ser Leu Ser
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Leu Thr Ala Phe Thr Thr Gln Tyr Ala Gly Gln Leu Lys Val His Leu
 340 345 350

Ser Val Ser Ala Val Asn Ala Val Asn Gln Lys Trp Lys Met Thr Pro
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Gln Asp Ser Ala Ile Thr Gln Phe Arg Val Ser Ser Glu Leu Leu Gly
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Gln Thr Glu Asn Gly Leu Ser Arg Asn Thr Lys Ser Gly Gly Ser Gln
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His Asp Leu Tyr Val Cys Pro Leu Lys Asn Pro Pro Ser Asp Leu Glu
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Glu Leu Gln Ile Ile Val Asp Glu Cys Thr Thr His Ala Gln Phe Val
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Thr Met Arg Ala Ala Ser Thr Phe Phe Val Asp Val Gln Leu Gly Trp
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Tyr Trp Arg Gly Tyr Tyr Tyr Thr Pro Gln Leu Ser Gly Trp Ser Tyr

450 455 460
 Gln Met Lys Thr Pro Asp Gly Gln Ile Phe Tyr Asp Leu Lys Thr Ser
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 Lys Ile Phe Phe Val Gln Asp Asn Gln Asn Val Phe Phe Leu His Asn
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 Lys Leu Asn Lys Gln Thr Gly Tyr Ser Trp Asp Trp Val Glu Trp Leu
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aattttggta gaagctatct tatttccact tcagaaacac ccacagcagc tattcgcttc 180
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agagctttac gcacttcctt tgcgtatcaa cgtgaatggg ttaccgatgg tccaattgca 420
gcagctaatag tccgtagtgc ttggctagta gatgctgttc ccgttgaacc tggtcagtct 480
caccaccggy ctggctgtgt tgtagagact actagaatta atgaaccgga aatgcacaac 540
cctcattatc aagagctgca aacccaagcc aatgatcaac catggttgcc aacaccagga 600
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ggtacttccg cttcgctatc gtttgcgtgc cctgattgga gtccaccttc tagtaatggt 720
gaaaatccgc taggcaaagt cattgcggaa aagattgata actataacct acaatcctta 780
ccacagtacg ctagcagtgt aaaggaactg gaagatacac cagtatacct aaggggaatt 840
aaaacgcaaa aaacctttat gttacaagca gatccgcaaa ataacaatgt ctttttggtc 900
gaagtaaacc ccaaacaaaa gtccagcttt ccccaaacca tcttcttttg ggatgtttat 960
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aaccaaaagt gaaaaatgac accgcaagac agtgcaataa ctcagtttcg ggtctcctct 1140
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cacgatttgt atgtatgtcc tttgaaaaat ccacctagtg atttgaaga attacaaata 1260
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ggttggctct atcagatgaa aacaccagat ggacagatat tctatgatct aaaaacttcg 1440
aaaatcttct ttgtccagga caacaaaaac gtgttctttc tccataataa actcaacaaa 1500
caaactgggt acagctggga ttgggtagaa tggctaaaac atgacatgaa tgaggacaaa 1560
gacgaaaact ttaaatggta cttttcgcgt gatgacctta ccattccttc cgttgaaggg 1620
cttaacttcc gccacattcg ctgttacgct gacaaccagc agttaaagggt gatcataagc 1680
ggttcacgtt ggggcgggtg gtactccact tacgataaag ttgaaagtaa tgtcgaagat 1740
aagatttttg tcaaagatgg ttttgatcgc ttt 1773

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<210> 10
 <211> 1773
 <212> DNA
 <213> Artificial

<220>
 <223> JL nucleotide sequence with tga codons changed to tgg for expression in E. coli

<400> 10
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 gaacatggct tttcaacttt aggtgatgtg agaaatTTTct ttgaacacat tctctccact 120
 aatttttgga gaagctatTTt tatttccact tcagaaacac ccacagcagc tattcgcttc 180
 tttggtagct ggttacggga atatgtacca gagcacccca gaagggctta cttatatgaa 240
 attcgtgccg accaacactt ttacaatgcc cgcgccactg gggagaactt gttagattta 300
 atgcgtcaaa gacaagtagt atttgactct ggtgatcgag aaatggcaca aatgggaatt 360
 agagctttac gcaacttctt tgcgtatcaa cgtgaatggg ttaccgatgg tccaattgca 420
 gcagctaatt tccgtagtgc ttggctagta gatgctgttc ccgttgaacc tggtcagtct 480
 caccacccgg ctggctcgtg tgtagagact actagaatta atgaaccgga aatgcacaac 540
 cctcattatc aagagctgca aacccaagcc aatgatcaac catggttgcc aacaccagga 600
 atagctactc ctgtacattt atcaattccc caagcagctt ccgttgctga tgtttcggaa 660
 ggtacttccg cttcgctatc gtttgctgct cctgattgga gtccaccttc tagtaatggg 720
 gaaaatccgc tagacaaatg cattgcggaa aagattgata actataacct acaatcctta 780
 ccacagtacg ctagcagtgt aaaggaactg gaagatacac cagtatacct aaggggaatt 840
 aaaacgcaaa aaacctttat gttacaagca gatccgcaaa ataacaatgt ctttttggtc 900
 gaagtaaacc ccaaacaaaa gtccagcttt ccccaaacca tcttcttttg ggatgtttat 960
 caacgaattt gtctcaagga tttaactggg gcacaaatca gtctttcgtc tactgccttt 1020
 actactcagt atgctgggtc gctcaaagtg caccttagtg ttagcgcggt taatgccgtg 1080
 aacaaaaagt ggaaaatgac accgcaagac agtgcaataa ctcagtttcg ggtctcctct 1140
 gaactgttag gtcaaactga aaatggcttg ttctggaata ccaagagtgg tggttcacia 1200
 cacgatttgt atgtatgtcc tttgaaaaat ccacctagtg atttggaaga attacaaata 1260
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 tttgttgatg ttcagctagg ctggtattgg aggggttatt actatacccc acaattaagt 1380
 ggttggtctt atcagatgaa aacaccagat ggacagatat tctatgatct aaaaacttcg 1440
 aaaatcttct ttgtccagga caacaaaaac gtgttctttc tccataataa actcaacaaa 1500

caaactgggtt acagctggga ttgggtagaa tggctaaaac atgacatgaa tgaggacaaa 1560
 gacgaaaact ttaaatggta cttttcgcgt gatgacctta ccattccttc cgttgaaggg 1620
 cttaacttcc gccacattcg ctgttacgct gacaaccagc agttaaaggt gatcataagc 1680
 ggttcacgtt ggggcggttg gtactccact tacgataaag ttgaaagtaa tgtcgaagat 1740
 aagatttttg tcaaagatgg ttttgatcgc ttt 1773

<210> 11
 <211> 1773
 <212> DNA
 <213> Artificial

<220>
 <223> RJL1 nucleotide sequence with tga codons changed to tgg for
 expression in E. coli

<400> 11
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 gaacatgggt tttcaacttt aggtgatgtg agaaatttct ttgaacacat tctctccact 120
 aattttggta gaagctatct tatttccact tcagaaacac ccacagcagc tattcgcttc 180
 tttggtagct ggttacggga atatgtacca gagcacccca gaagggttta cttatatgaa 240
 attcgtgccg accaactt ttacaatgcc cgcgccactg gggagaactt gtttagattta 300
 atgcgtcaaa gacaagtagt atttgactct ggtgatcgag aaatggcaca aatgggaatt 360
 agagctttac gcacttcctt tgcgtatcaa cgtgaatggg ttaccgatgg tccaattgca 420
 gcagctaata tccgtagtgc ttggctagta gatgctgttc ccgttgaacc tggatcatgt 480
 caccaccggg ctggtcgtgt tgtagagact actagaatta atgaaccgga aatgcacaac 540
 cctcattatc aagagctgca aaccaagcc aatgatcaac catggttgcc aacaccagga 600
 atagctactc ctgtacattt atcaattccc caagcagctt ccgttgctga tgtttcggaa 660
 ggtacttccg cttcgctatc gtttgcgtgc cctgattgga gtccaccttc tagtaatggt 720
 gaaaatccgc tagacaaatg cattgcggaa aagattgata actataacct acaatcctta 780
 ccacagtacg ctagcagtgt aaaggactg gaagatacac cagtatacct aaggggaatt 840
 aaaacgcaaa aaacctttat gttacaagca gatccgcaaa ataacaatgt ctttttggtc 900
 gaagtaaacc ccaaacaaaa gtccagcttt ccccaaacca tcttcttttg ggatgtttat 960
 caacgaattt gtctcaagga tttactgggt gcacaaatca gtctttcgct tactgccttt 1020
 actactcagt atgctggtca gctcaaagtg caccttagtg ttagcgcggg taatgccgtg 1080
 aacccaaagt ggaaaatgac accgcaagac agtgcaataa ctcagtttcg ggtctcctct 1140
 gaactgttag gtcaaatga aaatggcttg ttccggaata ccaagagtgg tggttcaca 1200

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cacgatttgt atgtatgtcc tttgaaaaat ccacctagtg atttgaaga.attacaaata 1260 . . . .
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tttgtttgatg ttcagctagg ctggtattgg aggggttatt actatacccc acaattaagt 1380
ggttggtctt atcagatgaa aacaccagat ggacagatat tctatgatct aaaaacttcg 1440
aaaatcttct ttgtccagga caaccaaaac gtgttctttc tccataataa actcaacaaa 1500
caaactgggt acagctggga ttgggtagaa tggctaaaac atgacatgaa tgaggacaaa 1560
gacgaaaact ttaaattgga cttttcgcgt gatgacctta ccattccttc cgttgaaggg 1620
cttaacttcc gccacattcg ctgttacgct gacaaccagc agttaaggt gatcataagc 1680
ggttcacgtt ggggcggtg gtactccact tacgataaag ttgaaagtaa tgtcgaagat 1740
aagattttgg tcaaagatgg ttttgatcgc ttt 1773

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<210> 12
<211> 24
<212> DNA
<213> Artificial

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<220>
<223> Oligonucleotide primer

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<400> 12
tttttacata tgccaaatcc tggt 24

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<210> 13
<211> 28
<212> DNA
<213> Artificial

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<220>
<223> Oligonucleotide primer

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<400> 13
cgttaaagga tcctcgctaa aagcgatc 28

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<210> 14
<211> 25
<212> DNA
<213> Artificial

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<220>
<223> Oligonucleotide primer

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<400> 14
ctagccaagc actacggaca ttagc 25

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<210> 15
<211> 27
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<213> Artificial

<220>

<223> Oligonucleotide primer

<400> 15
cgtagtgctt ggctagtaga tgctgtt 27

<210> 16
<211> 23
<212> DNA
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<220>

<223> Oligonucleotide primer

<400> 16
cctggtgttg gcaaccatgg ttg 23

<210> 17
<211> 23
<212> DNA
<213> Artificial

<220>

<223> Oligonucleotide primer

<400> 17
gatcaaccat ggttgccaac acc 23

<210> 18
<211> 24
<212> DNA
<213> Artificial

<220>

<223> Oligonucleotide primer

<400> 18
aaggtggact ccaatcaggg cacg 24

<210> 19
<211> 24
<212> DNA
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<400> 19
cgtgccctga ttggagtcca cctt 24

<210> 20
<211> 23
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<220>
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<400> 20
gcggtgtcat tttccacttt tgg 23

<210> 21
<211> 23
<212> DNA
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<220>
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<400> 21
ccaaaagtgg aaaatgacac cgc 23

<210> 22
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 22
ggtattccag aacaagccat tt 22

<210> 23
<211> 24
<212> DNA
<213> Artificial

<220>
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<400> 23
gcttggtctg gaataccaag agtg 24

<210> 24
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 24
ataacccta taccagccta g 21

<210> 25
<211> 59
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 25
gctggtattg gaggggttat tactataccc cacaattaag tggttggtct tatcagatg 59

<210> 26
<211> 24
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 26
ccattctacc caatcccagc tgta 24

<210> 27
<211> 24
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 27
tacagctggg attgggtaga atgg 24

<210> 28
<211> 24
<212> DNA
<213> Mycoplasma pneumoniae

<400> 28
tttttaaaaa tgccaaatcc tggt 24

<210> 29
<211> 20
<212> DNA
<213> Mycoplasma pneumoniae

<400> 29
aatgtccgta gtgcttgact 20

<210> 30
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Modified M129/B9 sequence

<400> 30
aatgtccgta gtgcttggt 20

<210> 31
<211> 20
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<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 31
agccaagcac tacggacatt 20

<210> 32
<211> 22
<212> DNA
<213> Mycoplasma pneumoniae

<400> 32
tgcttgacta gtagatgctg tt 22

<210> 33
<211> 22
<212> DNA
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<220>
<223> Oligonucleotide primer

<400> 33
tgcttgacta gtagatgctg tt 22

<210> 34
<211> 18
<212> DNA
<213> Mycoplasma pneumoniae

<400> 34
atgattgccca acaccagg 18

<210> 35
<211> 18
<212> DNA
<213> Artificial

<220>
<223> Modified M129/B9 sequence

<400> 35
atgggttgcca acaccagg 18

<210> 36
<211> 18
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 36
cctgggtgttg gcaaccat 18

<210> 37
<211> 18
<212> DNA
<213> Mycoplasma pneumoniae

<400> 37
accatgattg ccaacacc 18

<210> 38
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<220>
<223> Oligonucleotide primer

<400> 38
accatgggtg ccaacacc 18

<210> 39
<211> 19
<212> DNA
<213> Mycoplasma pneumoniae

<400> 39
cctgattgaa gtccacctt 19

<210> 40
<211> 19
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<220>
<223> Modified M129/B9 sequence

<400> 40
cctgattgga gtccacctt 19

<210> 41
<211> 19
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<220>
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<400> 41
aaggtggact ccaatcagg 19

<210> 42
<211> 18

<212> DNA
<213> Mycoplasma pneumoniae

<400> 42
cgtgccctga ttgaagtc 18

<210> 43
<211> 18
<212> DNA
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<220>
<223> Oligonucleotide primer

<400> 43
cgtgccctga ttggagtc 18

<210> 44
<211> 20
<212> DNA
<213> Mycoplasma pneumoniae

<400> 44
aaagtgaaaa atgacaccgc 20

<210> 45
<211> 20
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<220>
<223> Modified M129/B9 sequence

<400> 45
aaagtggaaa atgacaccgc 20

<210> 46
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 46
gcggtgcat tttccacttt 20

<210> 47
<211> 20
<212> DNA
<213> Mycoplasma pneumoniae

<400> 47
caaaagtgaa aaatgacacc 20

<210> 48
<211> 20
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<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 48
caaaagtgga aaatgacacc 20

<210> 49
<211> 22
<212> DNA
<213> Mycoplasma pneumoniae

<400> 49
aaatggcttg ttctgaaata cc 22

<210> 50
<211> 22
<212> DNA
<213> Artificial

<220>
<223> Modified M129/B9 sequence

<400> 50
aaatggcttg ttctggaata cc 22

<210> 51
<211> 23
<212> DNA
<213> Mycoplasma pneumoniae

<400> 51
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<210> 52
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<220>
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<400> 52
gcttggttctg gaataccaag agt 23

<210> 53
<211> 20
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<213> Mycoplasma pneumoniae

<400> 53
taggctggta ttgaaggggt 20

<210> 54
 <211> 20
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 <220>
 <223> Modified M129/B9 sequence

 <400> 54
 taggctggta ttggaggggt 20

 <210> 55
 <211> 17
 <212> DNA
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 <220>
 <223> Oligonucleotide primer

 <400> 55
 acccctatac cagccta 17

 <210> 56
 <211> 56
 <212> DNA
 <213> Mycoplasma pneumoniae

 <400> 56
 ggtattgaag gggttattac tataccccac aattaagtgg ttgatcttat cagatg 56

 <210> 57
 <211> 56
 <212> DNA
 <213> Artificial

 <220>
 <223> Oligonucleotide primer

 <400> 57
 ggtattggag gggttattac tataccccac aattaagtgg ttggtcttat cagatg 56

 <210> 58
 <211> 21
 <212> DNA
 <213> Mycoplasma pneumoniae

 <400> 58
 tacagctggg attgagtaga a 21

 <210> 59
 <211> 21
 <212> DNA
 <213> Artificial

<220>
<223> Modified M129/B9 sequence

<400> 59
tacagctggg attgggtaga a 21

<210> 60
<211> 21
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<220>
<223> Oligonucleotide primer

<400> 60
ttctacccaa tcccagctgt a 21

<210> 61
<211> 21
<212> DNA
<213> Mycoplasma pneumoniae

<400> 61
tacagctggg attgagtaga a 21

<210> 62
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Oligonucleotide primer

<400> 62
tacagctggg attgggtaga a 21

<210> 63
<211> 28
<212> DNA
<213> Mycoplasma pneumoniae

<400> 63
gatcgctttt agcgattaag ctttaacg 28

<210> 64
<211> 28
<212> DNA
<213> Artificial

<220>
<223> Modified M129/B9 sequence

<400> 64
gatcgctttt agcgaggatc ctttaacg 28

<210> 65
 <211> 28
 <212> DNA
 <213> Artificial

 <220>
 <223> Oligonucleotide primer

 <400> 65
 ggatcctcta cgcaatgcat ttgtctag 28

 <210> 66
 <211> 28
 <212> DNA
 <213> Artificial

 <220>
 <223> Oligonucleotide primer

 <400> 66
 catatgccaa caccaggaat agtactc 28

 <210> 67
 <211> 25
 <212> DNA
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 <220>
 <223> Oligonucleotide primer

 <400> 67
 ggatccacta ccagcctagc tgaac 25

 <210> 68
 <211> 29
 <212> DNA
 <213> Artificial

 <220>
 <223> Oligonucleotide primer

 <400> 68
 catatgggtc agctcaaagt gcaccttag 29

 <210> 69
 <211> 249
 <212> PRT
 <213> Mycoplasma pneumoniae

 <400> 69

 Met Pro Asn Pro Val Arg Phe Val Tyr Arg Val Asp Leu Arg Ser Pro
 1 5 10 15

 Glu Glu Ile Phe Glu His Gly Phe Ser Thr Leu Gly Asp Val Arg Asn
 20 25 30

Phe Phe Glu His Ile Leu Ser Thr Asn Phe Gly Arg Ser Tyr Phe Ile
 35 40 45

Ser Thr Ser Ser Glu Thr Pro Thr Ala Ala Ile Arg Phe Phe Gly Ser Trp
 50 55 60

Leu Arg Glu Tyr Val Pro Glu His Pro Arg Arg Ala Tyr Leu Tyr Glu
 65 70 75 80

Ile Arg Ala Asp Gln His Phe Tyr Asn Ala Arg Ala Thr Gly Glu Asn
 85 90 95

Leu Leu Asp Leu Met Arg Gln Arg Gln Val Val Phe Asp Ser Gly Asp
 100 105 110

Arg Glu Met Ala Gln Met Gly Ile Arg Ala Leu Arg Thr Ser Phe Ala
 115 120 125

Tyr Gln Arg Glu Trp Phe Thr Asp Gly Pro Ile Ala Ala Ala Asn Val
 130 135 140

Arg Ser Ala Trp Leu Val Asp Ala Val Pro Val Glu Pro Gly His Ala
 145 150 155 160

His His Pro Ala Gly Arg Val Val Glu Thr Thr Arg Ile Asn Glu Pro
 165 170 175

Glu Met His Asn Pro His Tyr Gln Glu Leu Gln Thr Gln Ala Asn Asp
 180 185 190

Gln Pro Trp Leu Pro Thr Pro Gly Ile Ala Thr Pro Val His Leu Ser
 195 200 205

Ile Pro Gln Ala Ala Ser Val Ala Asp Val Ser Glu Gly Thr Ser Ala
 210 215 220

Ser Leu Ser Phe Ala Cys Pro Asp Trp Ser Pro Pro Ser Ser Asn Gly
 225 230 235 240

Glu Asn Pro Leu Asp Lys Cys Ile Ala
 245

<210> 70
 <211> 256
 <212> PRT

<213> *Mycoplasma pneumoniae*

<400> 70

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Pro Gln Ala Ala Ser Val Ala Asp Val Ser Glu Gly Thr Ser Ala Ser
 20 25 30

Leu Ser Phe Ala Cys Pro Asp Trp Ser Pro Pro Ser Ser Asn Gly Glu
 35 40 45

Asn Pro Leu Asp Lys Cys Ile Ala Glu Lys Ile Asp Asn Tyr Asn Leu
 50 55 60

Gln Ser Leu Pro Gln Tyr Ala Ser Ser Val Lys Glu Leu Glu Asp Thr
 65 70 75 80

Pro Val Tyr Leu Arg Gly Ile Lys Thr Gln Lys Thr Phe Met Leu Gln
 85 90 95

Ala Asp Pro Gln Asn Asn Asn Val Phe Leu Val Glu Val Asn Pro Lys
 100 105 110

Gln Lys Ser Ser Phe Pro Gln Thr Ile Phe Phe Trp Asp Val Tyr Gln
 115 120 125

Arg Ile Cys Leu Lys Asp Leu Thr Gly Ala Gln Ile Ser Leu Ser Leu
 130 135 140

Thr Ala Phe Thr Thr Gln Tyr Ala Gly Gln Leu Lys Val His Leu Ser
 145 150 155 160

Val Ser Ala Val Asn Ala Val Asn Gln Lys Trp Lys Met Thr Pro Gln
 165 170 175

Asp Ile Ala Ile Thr Gln Phe Arg Val Ser Ser Glu Leu Leu Gly Gln
 180 185 190

Thr Glu Asn Gly Leu Phe Trp Asn Thr Lys Ser Gly Gly Ser Gln His
 195 200 205

Asp Leu Tyr Val Cys Pro Leu Lys Asn Pro Pro Ser Asp Leu Glu Glu
 210 215 220

Leu Gln Ile Ile Val Asp Glu Cys Thr Thr His Ala Gln Phe Val Thr

225		230		235		240									
Met	Arg	Ala	Ala	Ser	Thr	Phe	Phe	Val	Asp	Val	Gln	Leu	Gly	Trp	Tyr
				245					250					255	

<210> 71
 <211> 247
 <212> PRT
 <213> Mycoplasma pneumoniae

<400> 71

Ala	Gly	Gln	Leu	Lys	Val	His	Leu	Ser	Val	Ser	Ala	Val	Asn	Ala	Val
1				5					10					15	

Asn	Gln	Lys	Trp	Lys	Met	Thr	Pro	Gln	Asp	Ile	Ala	Ile	Thr	Gln	Phe
		20						25					30		

Arg	Val	Ser	Ser	Glu	Leu	Leu	Gly	Gln	Thr	Glu	Asn	Gly	Leu	Phe	Trp
		35					40					45			

Asn	Thr	Lys	Ser	Gly	Gly	Ser	Gln	His	Asp	Leu	Tyr	Val	Cys	Pro	Leu
	50					55					60				

Lys	Asn	Pro	Pro	Ser	Asp	Leu	Glu	Glu	Leu	Gln	Ile	Ile	Val	Asp	Glu
65					70					75					80

Cys	Thr	Thr	His	Ala	Gln	Phe	Val	Thr	Met	Arg	Ala	Ala	Ser	Thr	Phe
			85						90					95	

Phe	Val	Asp	Val	Gln	Leu	Gly	Trp	Tyr	Trp	Arg	Gly	Tyr	Tyr	Tyr	Thr
			100					105					110		

Pro	Gln	Leu	Ser	Gly	Trp	Ser	Tyr	Gln	Met	Lys	Thr	Pro	Asp	Gly	Gln
		115					120					125			

Ile	Phe	Tyr	Asp	Leu	Lys	Thr	Ser	Lys	Ile	Phe	Phe	Val	Gln	Asp	Asn
	130					135					140				

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